In the Claims:

Please cancel claims 67-72, 75, 76, 84-86, 94-96 and 126-140 and add claims 158-165 as follows:

1-57. (canceled)

58. (previously presented) A pharmaceutical composition comprising:

a) a polynucleotide function enhancer; and

b) A DNA molecule that comprises a DNA sequence that encodes an antigen from an intracellular pathogen; wherein

i) said polynucleotide function enhancer is a compound having one of the following formulas:

$$Ar - R^1 - O - R^2 - R^3$$

or

$$Ar - N - R^1 - R^2 - R^3$$

or

$$R^4 - N - R^5 - R^6$$

or

$$R^4 - O - R^1 - R^7$$

wherein:

Ar is benzene, *p*-aminobenzene, *m*-aminobenzene, *o*-aminobenzene, substituted benzene, substituted *p*-aminobenzene, substituted *m*-aminobenzene, substituted *o*-aminobenzene, wherein the amino group in the aminobenzene compounds can be amino, $C_1 - C_5$ alkylamine, C_1-C_5, C_1-C_5 dialkylamine and substitutions in substituted compounds are halogen, C_1-C_5 alkyl and C_1-C_5 alkoxy;

R^1 is C=O;

R^2 is C_1-C_{10} alkyl including branched alkyls;

R^3 is hydrogen, amine, C_1-C_5 alkylamine, C_1-C_5, C_1-C_5 dialkylamine;

$R^2 + R^3$ can form a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle;

R^4 is Ar, R^2 or C_1-C_5 alkoxy,a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle and a C_1-C_{10} alkoxy substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle;

R^5 is C=NH;

R^6 is Ar, R^2 or C_1-C_5 alkoxy, a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle and a C_1-C_{10} alkoxy substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle; and,

R^7 is Ar, R^2 or C_1-C_5 alkoxy, a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle and a C_1-C_{10} alkoxy substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle; and,

ii) said DNA sequence operatively linked to regulatory sequences which control the expression of said DNA sequence.

59. (original) The pharmaceutical composition of claim 58 wherein said DNA molecule is a plasmid.

60-62. (canceled)

63. (Previously presented) The pharmaceutical composition of claim 58 wherein said antigen is a viral antigen.

64. (previously presented) The pharmaceutical composition of claim 63 wherein said pathogen is a virus selected from the group consisting of: human immunodeficiency virus, HIV; Human T cell leukemia virus, HTLV; influenza virus; hepatitis A virus; hepatitis B virus; hepatitis C virus; human papilloma virus, HPV; Herpes simplex 1 virus, HSV1; Herpes simplex 2 virus, HSV2; Cytomegalovirus, CMV; Epstein-Barr virus, EBR; rhinovirus; and, coronavirus.

65-114. (canceled)

115. (previously presented) A method of introducing DNA molecules into cells of an individual comprising the steps of:

injecting into tissue of said individual at a site on said individual's body, DNA molecules and a polynucleotide function enhancer; wherein

i) said polynucleotide function enhancer is a compound having one of the following formulas:

$$Ar - R^1 - O - R^2 - R^3$$

or

$$Ar - N - R^1 - R^2 - R^3$$

or

$$R^4 - N - R^5 - R^6$$

or

$$R^4 - O - R^1 - R^7$$

wherein:

Ar is benzene, *p*-aminobenzene, *m*-aminobenzene, *o*-aminobenzene, substituted benzene, substituted *p*-aminobenzene, substituted *m*-aminobenzene, substituted *o*-aminobenzene, wherein the amino group in the aminobenzene compounds can be amino, $C_1 - C_5$ alkylamine, C_1-

C_5, C_1-C_5 dialkylamine and substitutions in substituted compounds are halogen, C_1-C_5 alkyl and C_1-C_5
alkoxy;

R^1 is C=O;

R^2 is C_1-C_{10} alkyl including branched alkyls;

R^3 is hydrogen, amine, C_1-C_5 alkylamine, C_1-C_5, C_1-C_5 dialkylamine;

$R^2 + R^3$ can form a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle;

R^4 is Ar, R^2 or C_1-C_5 alkoxy,a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle and a C_1-C_{10} alkoxy substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle;

R^5 is C=NH;

R^6 is Ar, R^2 or C_1-C_5 alkoxy, a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle and a C_1-C_{10} alkoxy substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle; and,

R^7 is Ar, R^2 or C_1-C_5 alkoxy, a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle and a C_1-C_{10} alkoxy substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle; and,

ii) said DNA molecules are taken up by cells in said tissue.

116. (previously presented) The method of claim 115 wherein said DNA molecule comprises a DNA sequence that encodes a protein, said DNA sequence operatively linked to regulatory sequences which control the expression of said DNA sequence.

117. (previously presented) The method of claim 115 wherein said DNA molecule is a plasmid.

118. (previously presented) The method of claim 115 wherein said tissue includes skin and muscle.

119. (previously presented) The method of claim 115 wherein said tissue is skin.

120. (previously presented) The method of claim 115 wherein said tissue is muscle.

121. (previously presented) The method of claim 120 wherein said tissue is skeletal muscle.

122. (previously presented) A pharmaceutical composition according to claim 58, wherein said polynucleotide function enhancer is a compound having the formula $Ar-R^1-O-R^2-R^3$.

123. (previously presented) The pharmaceutical composition of claim 122 wherein said DNA molecule is a plasmid.

124. (previously presented) The pharmaceutical composition of claim 122 wherein said antigen is a viral antigen.

125. (previously presented) The pharmaceutical composition of claim 124 wherein said pathogen is a virus selected from the group consisting of : human immunodeficiency virus, HIV; Human T cell leukemia virus, HTLV; influenza virus; hepatitis A virus; hepatitis B virus; hepatitis C virus; human papilloma virus, HPV; Herpes simplex 1 virus, HSV1; Herpes simplex 2 virus, HSV2; Cytomegalovirus, CMV; Epstein-Barr virus, EBR; rhinovirus; and, coronavirus.

126-140 (canceled)

141. (previously presented) A method of introducing DNA molecules into cells of an individual according to claim 115, wherein said polynucleotide function enhancer is a compound having the formula $Ar-R^1-O-R^2-R^3$.

142. (previously presented) The method of claim 141 wherein said DNA molecule comprises a DNA sequence that encodes a protein, said DNA sequence being operatively linked to regulatory sequences which control the expression of said DNA sequence.

143. (previously presented) The method of claim 141 wherein said DNA molecule is a plasmid.

144. (previously presented) The method of claim 141 wherein said tissue includes skin and muscle.

145. (previously presented) The method of claim 141 wherein said tissue is skin.

146. (previously presented) The method of claim 141 wherein said tissue is muscle.

147. (previously presented) The method of claim 146 wherein said tissue is skeletal muscle.

148. (currently amended) A method of inducing antibodies against an antigen in an individual comprising the steps of:

injecting into tissue of said individual at a site on said individual's body, a DNA molecule and a polynucleotide function enhancer,

said DNA molecule comprising a DNA sequence that encodes an antigen, said DNA sequence operatively linked to regulatory sequences which control the expression of said DNA sequence,

said polynucleotide function enhancer is a compound having one of the following formula:

$$Ar - R^1 - O - R^2 - R^3$$

or

$$Ar - N - R^1 - R^2 - R^3$$

or

$$R^4 - N - R^5 - R^6$$

or

$$R^4 - O - R^1 - R^7$$

wherein:

Ar is benzene, *p*-aminobenzene, *m*-aminobenzene, *o*-aminobenzene, substituted benzene, substituted *p*-aminobenzene, substituted *m*-aminobenzene, substituted *o*-aminobenzene, wherein the amino group in the aminobenzene compounds can be amino, $C_1 - C_5$ alkylamine, C_1-C_5, C_1-C_5 dialkylamine and substitutions in substituted compounds are halogen, C_1-C_5 alkyl and C_1-C_5
alkoxy;

R^1 is C=O;

R^2 is C_1-C_{10} alkyl including branched alkyls;

R^3 is hydrogen, amine, C_1-C_5 alkylamine, C_1-C_5, C_1-C_5 dialkylamine;

$R^2 + R^3$ can form a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle;

R^4 is Ar, R^2 or C_1-C_5 alkoxy,a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10}

alkyl substituted heterocycle and a C_1-C_{10} alkoxy substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle;

R^5 is C=NH;

R^6 is Ar, R^2 or C_1-C_5 alkoxy, a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle and a C_1-C_{10} alkoxy substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle; and,

R^7 is Ar, R^2 or C_1-C_5 alkoxy, a cyclic alkyl, a C_1-C_{10} alkyl substituted cyclic alkyl, a cyclic aliphatic amine, a C_1-C_{10} alkyl substituted cyclic aliphatic amine, a heterocycle, a C_1-C_{10} alkyl substituted heterocycle and a C_1-C_{10} alkoxy substituted heterocycle including a C_1-C_{10} alkyl N-substituted heterocycle; and,

wherein said DNA molecule is taken up by cells in said tissue, said DNA sequence is expressed in said cells and an antibody ~~immune response~~ is generated against said antigen.

149. (previously presented) The method of claim 148 wherein said polynucleotide function enhancer is a compound having the formula $Ar-R^1-O-R^2-R^3$.

150. (previously presented) The method of claim 148 wherein said DNA molecule is a plasmid.

151. (previously presented) The method of claim 148 wherein said antigen is an intracellular pathogen antigen.

152. (previously presented) The method of claim 148 wherein said antigen is a viral antigen.

153. (previously presented) The method of claim 152 wherein said viral antigen is of a virus selected from the group consisting of: human immunodeficiency virus, HIV; Human T cell leukemia virus, HTLV; influenza virus; hepatitis A virus; hepatitis B virus; hepatitis C virus; human papilloma virus, HPV; Herpes simplex 1 virus, HSV1; Herpes simplex 2 virus, HSV2; Cytomegalovirus, CMV; Epstein-Barr virus, EBR; rhinovirus; and, coronavirus.

154. (previously presented) The method of claim 148 wherein said tissue includes skin and muscle.

155. (previously presented) The method of claim 154 wherein said tissue is skin.

156. (previously presented) The method of claim 154 wherein said tissue is muscle.

157. (previously presented) The method of claim 156 wherein said tissue is skeletal muscle.

158. (new) The method of claim 149 wherein said DNA molecule is a plasmid.

159. (new) The method of claim 149 wherein said antigen is an intracellular pathogen antigen.

160. (new) The method of claim 149 wherein said antigen is a viral antigen.

161. (new) The method of claim 160 wherein said viral antigen is of a virus selected from the group consisting of: human immunodeficiency virus, HIV; Human T cell leukemia virus, HTLV; influenza virus; hepatitis A virus; hepatitis B virus; hepatitis C virus; human papilloma virus, HPV; Herpes simplex 1 virus, HSV1; Herpes simplex 2 virus, HSV2; Cytomegalovirus, CMV; Epstein-Barr virus, EBR; rhinovirus; and, coronavirus.

162. (new) The method of claim 149 wherein said tissue includes skin and muscle.

163. (new) The method of claim 162 wherein said tissue is skin.

164. (new) The method of claim 162 wherein said tissue is muscle.

165. (new) The method of claim 164 wherein said tissue is skeletal muscle.